

WHAT IS CLAIMED IS:

1. A system comprising:

5 an integrated circuit; and

a carbon foam material thermally coupled to the integrated circuit such that thermal energy from the integrated circuit is transferred to the carbon foam material.

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2. The system of claim 1, wherein the carbon foam material comprises graphitic carbon foam material.

3. The system of claim 1, wherein the carbon foam material is coated with a solder.

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4. The system of claim 1, wherein the carbon foam material is coated with a solder to a depth of at least two carbon foam ligament diameters into the body of the carbon foam material.

20 5. The system of claim 1, wherein the carbon foam material is coated with a reactive braze alloy.

6. The system of claim 5, wherein the braze alloy comprises about 1% to about 10% by weight of titanium.

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7. The system of claim 1, wherein the integrated circuit is coated with a metal silicide.

8. The system of claim 7, wherein the metal silicide is coated with an adherent metal.

9. The system of claim 1, wherein the carbon foam material is coupled to the integrated circuit by solder, and wherein the solder comprises copper, nickel, gold, silver, lead, silicon, indium, bismuth, titanium, tin, or mixtures thereof.
- 5 10. The system of claim 1, wherein the carbon foam material is coupled to the integrated circuit by a universal solder.
11. The system of claim 1, wherein the carbon foam material is coupled to the integrated circuit by adhesives.
- 10 12. The system of claim 1, wherein the carbon foam material is disposed within a chamber.
13. The system of claim 12, further comprising conduits coupled to the chamber, wherein
15 the conduits are configured to direct a heat exchange fluid into the chamber.
14. A method of coupling a carbon foam material to an integrated circuit comprising:

coupling the carbon foam material to the integrated circuit such that thermal
20 energy from the integrated circuit is transferred to the carbon foam material.
15. The method of claim 14, wherein the surface of the integrated circuit is cleaned.
16. The method of claim 14, further comprising cleaning the surface of the integrated
25 circuit by backspattering the surface of the integrated circuit with an inert gas.
17. The method of claim 14, wherein the surface of the carbon foam material is cleaned.
18. The method of claim 14, further comprising cleaning the surface of the carbon foam
30 material by backspattering with an inert gas.

19. The method of claim 14, further comprising coating the surface of the integrated circuit with a solder.

20. The method of claim 14, further comprising coating the surface of the carbon foam material with a solder.

21. The method of claim 14, further comprising coupling the integrated circuit and the carbon foam material with a solder.

22. The method of claim 14, further comprising coupling the integrated circuit and the carbon foam material with a solder, wherein the solder comprises copper, nickel, gold, silver, lead, silicon, indium, bismuth, titanium, tin, or mixtures thereof.

23. The method of claim 14, further comprising coupling the integrated circuit and the carbon foam material with a universal solder.

24. The method of claim 14, further comprising coupling the integrated circuit and the carbon foam material with adhesives.

25. The method of claim 14, further comprising forming a silicide on the surface of the integrated circuit.

26. The method of claim 25, further comprising coating the surface of the silicide comprises with an adherent metal.

27. The method of claim 14, wherein coupling the carbon foam material to the integrated circuit further comprises heating the carbon foam material with the integrated circuit in an inert atmosphere furnace.

28. The method of claim 14, wherein coupling the carbon foam material to the integrated circuit further comprises heating the carbon foam material with the integrated circuit in a reducing atmosphere furnace.

5 29. The method of claim 14, wherein coupling the carbon foam material to the integrated circuit further comprises heating the carbon foam material with the integrated circuit in a vacuum furnace.

30. The method of claim 14, wherein coupling the carbon foam material to the integrated
10 circuit further comprises heating the carbon foam material with the integrated circuit on a hot plate.

31. A system comprising:

15 a computer with an integrated circuit, wherein a carbon foam material is thermally coupled to the integrated circuit such that thermal energy from the integrated circuit is transferred to the carbon foam material.